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CHROMOSOME SPECIFIC COSMID AND LAMBDA LIBRARIES FOR HALF THE HUMAN GENOME

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The goal of the National Laboratory Gene Library Project has been to construct chromosome-specific clone libraries for the entire complement of human chromosomes. A joint effort between Livermore and Los Alamos National Laboratories has resulted in the construction of highly redundant partial digest lambda (~15 kb) and cosmid (~40 kb) libraries for each human chromosome. Libraries constructed at Lawrence Livermore National Laboratory have been prepared for chromosomes 1, 2, 3, 7, 9, 12, 18, 19, 21, 22, X, and Y. The source of DNA for all of the libraries has been human chromosomes sorted from human/rodent hybrid somatic cell lines containing a reduced number of human chromosomes. Using High Resolution Flow Karyotype Analysis and High Speed Chromosome Sorting, millions of human chromosomes are sorted in a single day with enrichment frequencies ranging from 7X for larger chromosomes to greater than 40X for the smaller chromosomes. All of the lambda libraries have been cloned into the Charon 40 replacement vector and amplified aliquots deposited in the American Type Culture Collection, Rockville, MD. Large arrays of the 40 kb insert cosmid libraries have been generated utilizing two different cloning vectors. Lawrist5 or Lawrist16 and pFos1 are double cos-site containing vectors that facilitate the cloning of nanogram quantities of *MboI* partial digest DNA. Both vectors contain desirable features that facilitate clone propagation and chromosome mapping. We have distributed in excess of 65 copies of individual libraries to researchers throughout the scientific community and identified several resource centers in both the United States and Europe which will receive the entire collection of arrayed libraries. The construction of chromosome-specific libraries has produced an invaluable set of resources that have aided in the mapping of human chromosomes. These resources are providing sequence-ready substrates that will contribute to the ultimate map, the sequence of the human genome.

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